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ISSUE THREE

ENGLAND 14
LAST WKT. 4
BOWLED 14

1947

ATARI 400

???

INSIDE....

Cricket Maths

Redesigning Characters

Calendar

Software Reviews

..and more!



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An ATARI™ Users Magazine

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Cover illustration by Mike Roper



Editor **Les Ellingham**

Editorial Offices **Tel. 0785 41153**

Printed by Birbeck & Sons Ltd.

Published by ABACUS

PAGE 6 is a Users magazine and relies entirely on readers support in submitting articles and programs. The aim is to explore Atari computing through the exchange of information and knowledge and we cannot unfortunately pay for articles published. We hope you will gain satisfaction from seeing your work published and in turn we hope you will learn from articles submitted by other readers.

Whilst we take whatever steps we can to ensure the accuracy of articles and programs submitted and the content of advertisements, PAGE 6 cannot be held responsible for any errors or claims made by advertisers.

Subscriptions to PAGE 6 are available from:

PAGE 6, 18, Underwood Close, Parkside, Stafford, England

Subscriptions cover 6 issues (1 year)

U.K.	£ 4.00
Europe—Airmail	£ 7.00
U.S.A.—Surface	£ 7.00
U.S.A.—Airmail	£14.00
Elsewhere—Surface	£ 7.00
Elsewhere—Airmail	£15.00

Single copies (U.K. only) 70p inc. p. & p.

Cheques etc. payable to ABACUS

PAGE 6 is published bi-monthly

Editorial

WHERE ARE THE PROGRAMMERS?

You all know that the UK glossy magazines feature very little about the Atari and one of the reasons put forward is that nobody sends them any material. Well, I am beginning to wonder whether that is true. Whilst much appreciation goes to those readers who have submitted articles and programs, the initial response seems to have dried up and we need more articles and programs for future issues.

If it is true that most people do not submit Atari programs to magazines, I wonder why? There could be two reasons. The first is that nobody writes any programs and the majority of owners spend all of their time playing games. If that is what you are doing, then put down your joystick read the articles and programs in this magazine and start writing some programs. It is not that difficult and you really don't know what you are missing. The real joy in owning a computer is in creating something of your own. Simple or complex, it doesn't really matter. When you finish your first program you will experience great satisfaction. The second reason could be that you look at some of the truly remarkable commercial software and think Wow! I could NEVER write anything like that! OK, so maybe you can't . . . yet! So be content with what you can write. Pick up some ideas from magazines, improve them or write something similar. Pay attention to the little details of presentation and you can write a program, long or short, that you can be proud of. Sit down now and start to write something. When you have finished, send it in to show other readers that we Atari owners can after all write programs. The magazine is totally dependent on your contributions.

Let's hear from you. It's your magazine.

Calendar

W. H. Staff

Want to know what day you were born? Want to know what day your Grandad was born? Find out all the dates you need with this calendar program.

```
1 REM ***********************************
2 REM *            CALENDAR             *
3 REM *               by                *
4 REM *          W.H. STAFF             *
5 REM ***********************************
10 ? CHR$(125)
20 POKE 752,1:POKE 712,192:POKE 710,19
2
30 CLR
40 DIM DATE$(12),DAY$(6),A$(11),B(2)
50 POSITION 4,4:? "Enter the Year you
wish to review":POSITION 4,5:? "Type Y
ear and press RETURN "
55 POSITION 18,8:INPUT YEAR
60 X=INT((YEAR+16)/28+0.5)
70 XZ=(YEAR+16)/28
80 LY=INT(YEAR/4)
90 LYS=YEAR/4
100 DAYS=(YEAR*365)+LY
110 WEEKS=DAYS/7
120 WEEK=INT(DAYS/7)
130 DAY=WEEKS-WEEK
140 DATE$=STR$(DAY)
150 DAY$=DATE$
160 IF DAY$="0" THEN DAY$="0.9999"
170 IF DAY$="0.1428" THEN C=1
180 IF DAY$="0.2857" THEN C=2
190 IF DAY$="0.4285" THEN C=3
200 IF DAY$="0.5714" THEN C=4
210 IF DAY$="0.7142" THEN C=5
220 IF DAY$="0.8571" THEN C=6
230 IF DAY$="0.9999" THEN C=7
240 DATA "JANUARY" ,31,"FEBRUARY" ,28
,"MARCH"     ,31,"APRIL"     ,30,"MAY"
   ,31,"JUNE"      ,30
250 DATA "JULY"      ,31,"AUGUST"    ,31
,"SEPTEMBER",30,"OCTOBER"   ,31,"NOVEMB
ER" ,30,"DECEMBER" ,31
260 ? CHR$(125)
270 DIM P(7),L(6)
280 L(1)=9:L(2)=11:L(3)=13:L(4)=15:L(5
)=17:L(6)=19
290 P(1)=4:P(2)=9:P(3)=14:P(4)=19:P(5)
=24:P(6)=29:P(7)=34
300 DIM S$(1)
310 E=1:D=D+C
320 IF X=XZ THEN D=8
330 IF LY=LYS THEN D=D-1
340 FOR M=1 TO 12:READ A$,B
350 IF LY=LYS AND B=28 THEN B=29
360 POSITION 12,2:? A$;" ";YEAR
370 POSITION 3,4:? "___________________
___________________":REM LINES ARE SHIFT M
INUS
380 POSITION 3,6:? "SUN  MON  TUE  WED
  THU  FRI  SAT"
390 POSITION 3,7:? "___________________
___________________"
400 FOR Z=1 TO B
410 IF E=7 THEN E=1
420 IF D=8 THEN D=1
430 IF Z<10 THEN GOSUB 530
440 IF Z>=10 THEN GOSUB 540
450 D=D+1:IF D=8 THEN E=E+1
460 NEXT Z
470 POSITION 6,21:? "PRESS 'RETURN' TO
 CONTINUE":POSITION 11,22:? "OR 'F' TO
 FINISH ";:INPUT S$
480 IF S$=" " THEN GOTO 500
490 IF S$="F" THEN GOTO 10
500 E=1:IF M=12 THEN RUN
510 ? CHR$(125):NEXT M
520 END
530 POSITION P(D),L(E):? CHR$(32);Z:RE
TURN
540 POSITION P(D),L(E):? Z:RETURN
```

News

A new independent disk drive has just become available in the States. The RANA 1000 disk drive features switchable single/double density and has a few extra features such as automatic write protect and LED readout of disk contents. The really interesting news though is that it sells in the States at one-third less than the price of the Atari drive! Let's hope that it becomes available over here soon at that sort of price.

A new book from Compute! that is an absolute must if you want to dig deeply into your Atari, is Mapping The Atari by Ian Chadwick. Seems to be in short supply at the moment but is well worth hunting down.

Antic magazine is now monthly which is great news. Several people have written to ask where they can buy Antic, Analog and Compute! Try Calisto Computers in Birmingham or Gemini Electronics in Manchester, both of whom stock these magazines. If any other retailers keep them, let us know.

Input

Dear Sir,

In Issue 2 you published Four In A Row. The more astute of your readers may have noticed the 'deliberate' mistake of the spurious line 10045 RETURN. This prevents the text window being re-positioned on the screen and may cause it not to be displayed on some TV's but otherwise it should work OK.

I have been hearing a lot of comments about the quality of 48K upgrade boards for the Atari 400. I have had a MAPLIN board fitted at their Birmingham branch and this is working fine in spite of the use it gets at Club meetings. There appears to be a propaganda war being waged by suppliers of these boards. Perhaps your magazaine could publish an unbiased review of these, but what you could say apart from 'it works' or 'it doesn't work' may be of interest only to electronics experts and not the normal user.

Mike Aston,
Wednesbury

**The question of what upgrade is the best quality and value is certainly one which most 400 owners will be interested in. As you say, some suppliers do tend to put down boards put out by competitors on the grounds that the chips used are likely to cause overheating. To get an expert review we would probably have to ask one of the manufacturers and the views are unlikely to be unbiased. Perhaps more to the point would be to ask owners who have had upgrades what their experiences have been. If you have had your 400 upgraded to 48K write in and let us know. Who did you go to and why? Were you given any guarantee? Have you had any problems and if so what happened? Did you get a repair or replacement without bother? We would also be pleased to hear from suppliers and retailers — what makes your board reliable?

Dear Page 6,

Great magazine. At last one just for Atari users. I have a couple of questions to ask.

In the basic manual there is a description of RND. The variable or expression in parentheses following RND is said to be a dummy with no effect on the numbers returned.

If this is the case, what effect will a Ø or 1 in the parentheses have on the outcome of a random number as several programs seem to use these. An example from an actual program is 7Ø R=INT (Ø)+1: S=INT(RND(1)*16).

Also, I have just had a 48K memory put in my 400 which seems to work OK, no patterning problems. Is there something I can type in to check that I have actually got a 48K memory in there working to its full extent? What would I expect to see printed on the screen with a 16K, 32K or 48K memory, assuming no program as such has been typed in?

Mrs. E. E. Matthews,
Walton-on-Thames

**I have heard it said that a Ø used as the variable produces a totally random number whilst a 1 prints the next number in a series of random numbers, though what truth there is in this I don't know. It may just be based on another machine's method of choosing random numbers. Does anyone know whether this is true? You can check your memory by typing FRE(Ø) after you power up (don't boot DOS if you have a disk drive). With 16K you should get 13326, with 32K 29710, and with 48K 37902. The seeming discrepancy with 48K is not due to your being done out of some memory but is because the Basic Cartridge overlays the memory between 40K and 48K. With 16 or 32K this makes no difference but with 48K you do lose 8K to Basic. Take out the cartridge and you have an extra 8K although you can't then write programs in Basic. If you buy a 48K game however which boots without the Basic cartridge you are probably getting the full 48K use.

Keep sending in you letters. Not only do they let us know what you want, they also spark off ideas for articles and programs.

Cricket Maths

Phil Griffin

Here's your chance to excercise your 'grey cells' and perhaps earn yourself a place in the next England cricket team!

Three levels of difficulty are included and the program randomly selects maths problems which, if answered correctly, can earn runs. The outcome of a correct answer is decided (randomly) by the computer and that means you may be 'caught' even though you answered the question correctly! If you answer incorrectly you are 'bowled out'.

The program records the total runs scored and the number of wickets lost. On the loss of a wicket, the score at that point is recorded as 'LAST WICKET' and the number of runs scored since the previous wicket was lost is recorded as 'LAST BATSMAN'. At the start of a further innings, the previous and current scores can be compared.

For the technically minded, all graphics displays use modified display lists. The opening credits use Graphics 1 and 2, and the animation sequence is in Graphics 7. The 'option' screen uses Graphics 1 and 2 while Graphics 0,1 and 2 are used for the scoreboard. An expanded text window is used for dealing with the question and answer routines and any 'error' messages. Score details are "POKEd" directly to the screen using the 'memory mapped' screen locations.

To ensure the best colour display, make sure you read all REM statements and use inverse video where indicated and use lower case as printed.

```
1 REM ** CRICKET  MATHS **
2 REM **     BY       **
3 REM **  PHIL GRIFFIN  **
5 DATA 0,64,1,64,4,64,20,64,68,64,68,6
4,68,64,68,64,68,64,68,64,68,64,68,64,
68,68,68,80,68,64,69,0,68,0,80,0,64,0
7 DATA 53,54,45,182,47,48,40,144,45,46
,35,121,47,48,40,144,53,54,45,162,60,6
1,47,128,64,65,53,108,53,54,45,128
8 DATA 60,61,47,121,144,162,193,243
10 GOTO 5000
79 REM ** START CHECK **
80 IF PEEK(53279)<>6 THEN RETURN
82 POP :GOTO 1010
89 REM ** DELAY SUBROUTINE **
90 FOR DLY=1 TO N:NEXT DLY:RETURN
99 REM ** BANNER SUBROUTINE **
100 POSITION 3,1:? #6;A$(D,D+13):D=D+1
:IF D=29 THEN D=1
110 POKE 53279,8:IF PEEK(53279)=5 THEN
 CLR :POP :POP :GOTO 140
120 GOSUB 90
130 RETURN
140 DIM A$(13),LI(3),R(3),WKTS(3),LBAT
(3):A$="   ^^^^^^^^^^^":FOR I=1 TO 3:LI
(I)=0:NEXT I:GOTO 6000
199 REM ** GRAPHICS SUBROUTINES **
200 GOSUB 300:A=A-81:GOSUB 300:A=A-81:
GOSUB 300:POKE A-41,2:GOSUB 90:POKE A-
41,32:GOSUB 100:POKE A-41,0:A=A-2
210 GOSUB 310:A=A+79:GOSUB 310:RETURN
220 GOSUB 300:A=A-81:GOSUB 300:A=A-81
230 POKE A.70:GOSUB 90:POKE A,68:POKE
A-40,96:GOSUB 100:POKE A-40,64:POKE A-
81,70:GOSUB 90:RETURN
300 SOUND 0,0,0,0:SOUND 1,0,0,0:POKE A
,2:GOSUB 90:POKE A,0:POKE A-40,32:GOSU
B 100:POKE A-40.0:RETURN
310 SOUND 0,0,0,0:SOUND 1.0.0.0:POKE A
,2:GOSUB 90:POKE A.0:POKE A+40.32:GOSU
B 100:POKE A+40,0:RETURN
1000 REM ** SET UP SCOREBOARD **
1010 GRAPHICS 1:SETCOLOR 2,2.2:DL=PEEK
(560)+256*PEEK(561):POKE DL+3,71:POKE
DL+8,2:POKE DL+9,2
1012 POKE DL+12,7:POKE DL+24,2
1015 POSITION 3,0:? #6;"cricket  maths
":REM ALL INVERSE
1020 POSITION 0,3:? #6;"  Try to score
 runs by answering these  ":REM ALL IN
VERSE
1030 POSITION 0,5:? #6;"              m
aths problems           ":REM ALL IN
VERSE
1040 POSITION 0,9:? #6;"runs:000  wick
ets:00"
1050 POSITION 2,13:? #6;"last wicket:0
00":POSITION 2,15:? #6;"last batsman:0
00"
1055 TL=PEEK(88)+256*PEEK(89)
1060 POSITION 2,18:? #6;A$:FOR I=0 TO
2:POKE TL+375+I,LI(I+1):NEXT I
1070 FOR I=1 TO 3:R(I)=16:WKTS(I)=16:L
BAT(I)=16:NEXT I
1080 POKE 752,1:GOSUB 7010
1090 TRAP 10000
1100 REM ** QUESTION GENERATOR **
1110 ? CHR$(125):IF RND(1)>0.5 THEN 20
00
```

over

```
1120 A=INT(RND(1)*P1+R1):B=INT(RND(1)*
P2+R2):IF RND(1)>0.5 THEN 1200
1130 C=A*B:POSITION 2,21:? #6;A;"*";B;
"=?  ":GOTO 4000
1200 D=A*B:C=A:A=D:POSITION 2,21:? #6;
A;"/";B;"=?  ":GOTO 4000
2000 A=INT(RND(1)*P3+R3):B=INT(RND(1)*
P3+R3):IF RND(1)>0.5 THEN 2100
2010 C=A+B:POSITION 2,21:? #6;A;"+";B;
"=?  ":GOTO 4000
2100 IF A>B THEN C=A-B:POSITION 2,21:?
 #6;A;"-";B;"=?  ":GOTO 4000
2110 C=B-A:POSITION 2,21:? #6;B;"-";A;
"=?  ":GOTO 4000
2999 REM ** CORRECT ANSWER **
3000 FOR I=-20 TO 0:X=I:FOR Z=0 TO 3:S
OUND Z,ABS(X),10,7:X=X+3:NEXT Z:NEXT I
3002 FOR X=6 TO 0 STEP -1:FOR Z=0 TO 3
:SOUND Z,0,10,X:NEXT Z:NEXT X:FOR I=1
TO 100:NEXT I
3005 POSITION 2,21:? #6;"        ":?
CHR$(125):? "WELL HIT .....";
3006 FOR I=1 TO 200:NEXT I:GOTO 3000+(
INT(RND(1)*6+1)*10)
3010 ? "FOR 6 RUNS.":R(3)=R(3)+6:LBAT(
3)=LBAT(3)+6:GOTO 3200
3020 ? "FOR 4 RUNS.":R(3)=R(3)+4:LBAT(
3)=LBAT(3)+4:GOTO 3200
3030 ? "FOR 2 RUNS.":R(3)=R(3)+2:LBAT(
3)=LBAT(3)+2:GOTO 3200
3040 ? "FOR 1 RUN.":R(3)=R(3)+1:LBAT(3
)=LBAT(3)+1:GOTO 3200
3050 ? "FOR 3 RUNS.":R(3)=R(3)+3:LBAT(
3)=LBAT(3)+3:GOTO 3200
3060 ? "BUT YOU'VE BEEN CAUGHT!":GOSUB
 9000:GOTO 4500
3199 REM ** SCORE UPDATE **
3200 IF R(3)>25 THEN R(3)=R(3)-10:R(2)
=R(2)+1
3210 IF R(2)=26 THEN R(2)=R(2)-10:R(1)
=R(1)+1
3220 IF LBAT(3)>25 THEN LBAT(3)=LBAT(3
)-10:LBAT(2)=LBAT(2)+1
3230 IF LBAT(2)=26 THEN LBAT(2)=LBAT(2
)-10:LBAT(1)=LBAT(1)+1
3240 FOR Z=0 TO 2:POKE TL+185+Z,R(Z+1)
:NEXT Z:FOR I=1 TO 450:NEXT I:GOTO 111
0
3999 REM ** ANSWER ROUTINE **
4000 POKE 16,64:POKE 53774,64:POKE 764
,255:INPUT D:IF PEEK(TL+522)<>31 THEN
8000
4002 IF C=D THEN GOTO 3000
4005 GOSUB 9000
4009 REM ** WRONG ANSWER **
4010 ? CHR$(125):? "WRONG-I'M AFRAID Y
OU'VE BEEN BOWLED.":? "THE ANSWER WAS
";C;".":FOR I=1 TO 500:NEXT I
4500 WKTS(3)=WKTS(3)+1:IF WKTS(3)=26 T
HEN WKTS(3)=16:WKTS(2)=17
4520 POKE TL+198,WKTS(2):POKE TL+199,W
KTS(3):FOR Z=0 TO 2:POKE TL+274+Z,R(Z+
1):POKE TL+315+Z,LBAT(Z+1):NEXT Z
4530 FOR Z=1 TO 3:LBAT(Z)=16:NEXT Z:FO
R I=1 TO 450:NEXT I:POSITION 2,21:? #6
;"           "
4540 IF WKTS(3)=17 AND WKTS(2)=17 THEN
 4550
4545 GOTO 1110
4550 ? CHR$(125):? "    THAT'S IT! YOU
RE ALL OUT!!!"
4555 ? "  PRESS START FOR ANOTHER INNI
NGS.":REM START IN INVERSE
4560 POKE 53279,8:IF PEEK(53279)<>6 TH
EN 4560
4570 A$="last innings:":FOR I=1 TO 3:L
I(I)=R(I):NEXT I:GOTO 6000
5000 REM ** SPLIT SCREEN GRAPHICS **
5010 GRAPHICS 23:DL=PEEK(560)+256*PEEK
(561):POKE DL+3,70:FOR Z=6 TO 14 STEP
2:POKE DL+Z,7:POKE DL+Z+1,6:NEXT Z
5015 POKE DL+16,7
5020 POKE DL+64,PEEK(560):POKE DL+65,P
EEK(561):POKE 87,1
5030 REM ** OPENING CREDITS **
5040 DIM A$(47):N=10
5049 REM ALL # IN NEXT TWO LINES IN IN
VERSE
5050 POSITION 2,0:? #6;"##############
##":POSITION 2,2:? #6;"##############
#":SETCOLOR 3,15,6:SETCOLOR 0,3,6
5060 POSITION 2,1:? #6;"#
#"
5070 A$="            cricket maths
 "
5079 REM 'by' IN NEXT LINE IN INVERSE
5080 POSITION 9,4:? #6;"by":POSITION 0
,6:? #6;"P.A.GRIFFIN (C.1983)":POSITIO
N 5,8:? #6;"**********":REM * INVERSE
5089 REM 'press' and 'to play' IN NEXT
 LINE IN INVERSE
5090 POSITION 0,10:? #6;"press'select'
to play"
5100 REM ** GRAPHICS MOVEMENTS **
5105 TL=PEEK(88)+256*PEEK(89)
5110 FOR Z=446 TO 1166 STEP 40:READ A,
B:POKE TL+Z,A:POKE TL+Z+1,B:NEXT Z:POK
E TL+1205,1:REM ** WICKETS **
5120 D=1:SOUND 0,255,10,15:SOUND 1,255
,10,15:A=TL+1113:GOSUB 200:SOUND 0,255
,10,15:SOUND 1,255,10,15:A=TL+1107
5125 GOSUB 200:SOUND 0,255,10,15:SOUND
 1,255,10,15:A=TL+1101:GOSUB 200:SOUND
 0,255,10,15:SOUND 1,255,10,15
5130 A=TL+1095:GOSUB 200:SOUND 0,255,1
0,15:SOUND 1,255,10,15:A=TL+1089:GOSUB
 220:SOUND 0,150,12,10
5140 FOR Z=486 TO 566 STEP 40:POKE TL+
Z,0:NEXT Z:FOR Z=606 TO 1006 STEP 40:P
OKE TL+Z,64:NEXT Z:POKE TL+1046,65
```

```
5150 SOUND 0,0,0,0:FOR Z=1 TO 30:GOSUB
 100:FOR J=1 TO 10:NEXT J:NEXT Z
5160 RESTORE :GOTO 5110
5999 REM ** OPTION ROUTINE **
6000 GRAPHICS 17:DL=PEEK(560)+256*PEEK
(561):FOR Z=0 TO 4:POKE DL+11+Z,7:NEXT
 Z
6009 REM NEXT THREE LINES IN INVERSE E
XCEPT 'option' AND 'start'
6010 POSITION 2,0:? #6;"press'option'f
or":POSITION 2,1:? #6;"difficulty leve
l"
6020 POSITION 3,6:? #6;"1 : EASY":POSI
TION 3,8:? #6;"2 : MODERATE":POSITION
3,10:? #6;"3 : HARD"
6030 POSITION 0,16:? #6;"press'start't
o begin"
6100 TL=PEEK(88)+256*PEEK(89):POKE TL+
216,0:POKE TL+136,74:P1=11:R1=2:P2=11:
R2=2:P3=29:R3=2
6105 FOR I=1 TO 100:NEXT I:POKE 53279,
8
6110 IF PEEK(53279)<>3 THEN GOSUB 80:G
OTO 6110
6120 POKE TL+136,0:POKE TL+176,74:P1=1
9:P2=8:P3=96:R3=5:FOR I=1 TO 100:NEXT
I:POKE 53279,8
6130 IF PEEK(53279)<>3 THEN GOSUB 80:G
OTO 6130
6140 POKE TL+176,0:POKE TL+216,74:P1=9
9:P2=11:P3=466:R3=35:FOR I=1 TO 100:NE
XT I:POKE 53279,8
6150 IF PEEK(53279)<>3 THEN GOSUB 80:G
OTO 6150
6160 GOTO 6100
7000 REM ** MUSIC ROUTINE **
7010 RESTORE 7:N=100
7020 FOR I=1 TO 9:READ A,B,C,D:SOUND 0
,A,14,6:SOUND 1,B,14,6:SOUND 2,C,14,6:
SOUND 3,D,14,6:GOSUB 90:NEXT I
7030 FOR I=1 TO 4:READ A:SOUND 3,A,14,
6:GOSUB 90:NEXT I:N=300:GOSUB 90
7040 FOR I=6 TO 0 STEP -2:SOUND 0,60,1
4,I:SOUND 1,61,14,I:SOUND 2,47,14,I:SO
UND 3,243,14,I:NEXT I
7050 FOR I=1 TO 200:NEXT I:RETURN
7999 REM ** LOST ? ROUTINE **
8000 FOR Z=1 TO 20:SOUND 0,25,2,8:NEXT
 Z:SOUND 0,0,0,0
8010 ? CHR$(125):? "SOMEHOW YOU'VE LOS
T THE INPUT PROMPT":? "  -PLEASE INPUT
 YOUR ANSWER AGAIN!"
8020 FOR I=1 TO 750:NEXT I:? "}":GOTO
4000
8999 REM ** WRONG ANSWER SOUND **
9000 FOR Z=1 TO 5:SOUND 0,Z*20,12,9:FO
R I=1 TO 40:NEXT I:SOUND 0,0,0,0:FOR I
=1 TO 25:NEXT I:NEXT Z:RETURN
9999 REM ** TRAP ROUTINE **
10000 FOR Z=1 TO 20:SOUND 0,25,2,8:NEX
T Z:SOUND 0,0,0,0
10005 ? CHR$(125):? "     PLEASE INPUT
 ONLY NUMBERS":? "          IN YOUR AN
SWER!":FOR I=1 TO 650:NEXT I:TRAP 100
10010 ? CHR$(125):GOTO 4000
```

User Groups/Contact

If you run a User Group or would like to get in touch with other Atari owners, let us know and we will happily publish details.

See Issue 2 for User Groups in MERSEYSIDE, EDINBURGH and PRESTON. Meanwhile, here are a few more contacts.

NORTH WALES.—G.P. Video Systems of Wrexham have just started up a User Group. No details yet of meeting place or time. Get in touch with

G.P. VIDEO SYSTEMS,
36, HENBLOS STREET,
WREXHAM
Tel. 0978 264451

NORWICH.—Ken and Sherry Ward are trying to get some people together to form a local User Group. If you live in or near Norwich, get in touch.

KEN & SHERRY WARD,
45, COLEBURN ROAD,
LAKENHAM,
NORWICH
Tel. 0603 661149

HULL.—Harvey Kong Tin would like to meet anyone locally to sort out some problems and learn some more. Write or 'phone.

HARVEY KONG TIN,
546, HOLDERNESS ROAD,
HULL, HU9 3ES
Tel. HULL 791094

ARCADE ACTION *Reviews*

Three more of the classic arcade games are now available for your Atari 400/800. They are reviewed here for us by reader HARVEY KONG TIN who appears to be an avid arcade gamer.

DEFENDER

16K ROM

ATARI 1/2 PLAYERS

The Arcade game is at last available for the Atari 400/800 and plays very much like the arcade — fast action and furious enemies.

Like Airstrike the game is best played with your computer on the floor, so that your foot controls the very important space bar which in this case controls your life-saving smart bombs. With this arrangement, a very responsive joystick (the Wico Command Control is excellent) and persevered endurance, your scores will climb. For those unfamiliar with this highly-rated game — your spacecraft moves in four directions with unlimited fire power, your aim is to protect the humanoids on a planetoid landscape. There are five types of enemy craft to become familiar with, which you will need to do to climb to 100,000 points. A radar screen prepares you for any oncoming hazards as you pass over the scrolling landscape. Smart bombs obliterate any enemy on the screen except for their fire. You start off with three and earn an extra one for each 10,000 points.

The sound didn't sound like the arcade version at first, but after a while it grows on you and starts sounding familiar. While the graphics are not sharply defined (but equal to the worst quality arcade machine) the action and pace is there for anyone hardy enough to enjoy it.

This cartridge is for fans who enjoy defender who are willing to forgive Atari for being a bit rushed with it.

GORF

16K ROM/DISK

ROKLAN 1/2 PLAYERS

A quality arcade game from Roklan. This game gives you four different missions to go through.

The first, Astro Battles, is a mini version of Space Invaders. Even if you were lousy with Space Invaders, you can easily learn to survive this mission and continue with the others. The second, Laser Attack, reminds me of Galaxian in a kamikaze sort of way — two ships fire lasers and the rest ram you!

The third mission, Space Warp, requires you to shoot Gorfs and Fighters as they emerge from a vortex. The fourth and final mission of each round is Flag Ship, where you must first blast through a force field arc to shoot at the big ship. Just like Star Wars, you are aiming for a sensitive internal reactor vent. However, defensive fireballs are coming at you and rebounds of your own shots can hit you. With any ships remaining you can go through all the hazards again — faster and faster.

The graphics and sound are very well programmed and the game should suit those fond of arcade games. The four separate missions add variety and makes Gorf somewhat more challenging than the one screen games.

GALAXIAN

16K ROM

ATARI 1/2 PLAYERS

Another direct translation of a popular arcade game. All of the elements of Galaxian are there. An overhead fleet of enemy spaceships in formation which peel off to attack your ship below and, if they survive your fire, return to formation.

You need to be firing constantly, once to get your gun ready and once to fire a shot. You have a choice of different levels to start at — even a beginner's level where they don't fire back. The graphics are well handled apart from the missing bright red of enemy ships. The starfield is effective and stays in the background. The sound effects are poor though and tend to irritate rather than add to the game.

There are differences to the arcade version. You have incredible horizontal speed enabling you to duck missiles quickly and there are no ships that home in on you in wild parabolic paths. Overall the cartridge doesn't match up well with the arcade game and I guess it's a matter of taste if you find this game very playable. I would recommend trying it out before buying.

A good question to end with would be — Will Atari produce a version of Galaga? The graphics and sound would have to be nothing short of superb to bring this cute invader game into the home for the Atari owner.

Happy Gaming! HARVEY KONG TIN.

Character Redefinition

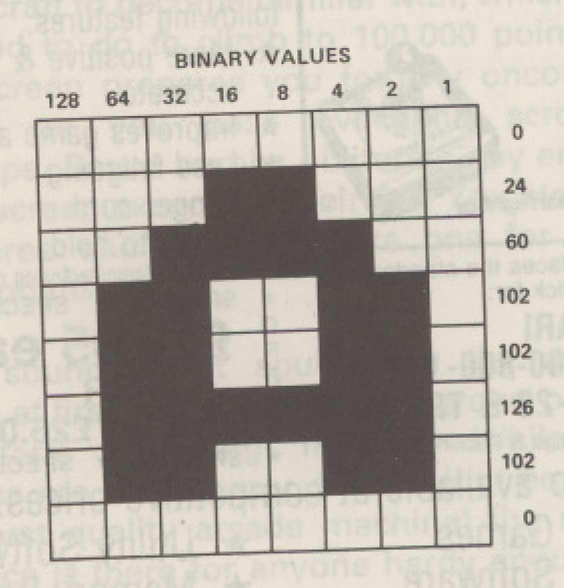
Michael Jackson

The Atari computer is truly an electronic marvel which offers fabulous graphics and sounds. It is for these qualities the Atari Home Computers are best known. There is, however, another feature that the Atari possesses which, when used to best effect, can be just as stunning — if not more so — than all those very impressive graphics modes.

How would you like Roman-style numerals instead of the normal numbers? Or perhaps some artistic script writing (like the writing you see in Scott Adams Adventures!)? What about some trees or perhaps grass? Some mountains might be nice! How can all this be done? It's called character redefinition.

Probably the best place to start understanding the principles of character redefinition is to examine what makes up a single character in the first place. Each character can be mapped on an 8 x 8 grid which represents 8 bytes of memory inside the computer. A character is best thought of as being composed of 8 layers — see figure 1 — with each layer representing a consecutive address in memory.

As you can see from figure 1, the shape of the character is decided by which 'bits' are filled in (on) and which are not (off) in each layer.



This image is stored in memory and the value stored at each memory address (representing each layer) is determined by the placement of the 'on' bits. Let's suppose that layer 1 starts at address 30000. To create the shape in figure 1 you would POKE 30000,0;30001,24;30002,60 and so on. Address 30008 would represent the first layer of another character.

Now you know the basic principle of creating a character, let's get down to practicalities.

WHERE TO STORE YOUR CHARACTER DATA

The memory of your Atari is grouped together in lots of 256 address locations. Each group or lot of memory is referred to as a 'page'.

You must decide which memory page to start storing your character set data. Care must be taken to avoid occupying memory which may be taken by your Basic program. The bigger your Basic program (which needs your custom character set), the higher up in memory you must go to store your character data, i.e. the page number must be bigger. I have found that page 120 (on a 32K machine) works well enough for me. With a page number of 120, this means that the starting address for your custom set is 120x256 which equals 30720. Try poking 756,120. If the screen goes blank, this means that there is nothing in that area of memory and that you can store your character data there. It is wise to do this while you have the program which is going to use your character set already in memory. If the screen is full of weird characters then you must try a higher page.

SELECTING CERTAIN CHARACTERS ONLY

Up till now I have assumed that you want to redefine every keystroke character or will only use those characters that you have redefined. Sometimes, however, you may want to change only one or two characters and keep the rest the same as the Atari set. For example, if you have a business program, you will probably want a '£' sign rather than the '$' sign! Perhaps a proper division sign instead of '/'.

If this is the case, then two things must be done. First, the whole Atari character set must be copied over into the spare memory pages you have selected and then selective areas that

relate to the character/keystroke you want to change must be POKED with new values. In case you're thinking of giving up, I should add that the CHARACTER GENERATION UTILITY program does everything for you, but I will explain it here so you can understand the mechanics better.

The following short program would deal with the first task:

```
10 FOR I=0 TO 1023: POKE
120*256+I,PEEK(224*256+I): NEXT I
```

Page number 224, by the way, is the page which the computer uses to store its permanent character set. This page cannot be changed which is why you need to copy the character set to another location. As you will see, this program simply peeks what is in page 224 and then copies it into page 120. If you want to actually see the copying process taking place, then switch off the computer and re-enter the program but with Line 5 POKE 756,120. Run it. Weird, isn't it?

The second task, picking out that group of 8 memory addresses for your particular character, requires consultation of your Atari Basic Reference Manual at page 55. Here you will find a table which details the relative positions of characters. Let us suppose you want to poke data that creates a '£' sign into the area of memory that currently holds the $ sign. Consider the following program, which does this.

```
10 FOR I=0 TO 7:READ A
20 POKE 120*256+4*8+I,A
30 NEXT I
40 DATA 28,32,32,32,120,32,98,126
```

Let's see now. Line 10 reads each of your data values. There are 8 values — one for each layer of your character. In this case it is a pound sign. Line 20 identifies the starting point of your character set (120*256), then it calculates the first of the 8 addresses you want (+4*8) — where 4 is the internal number representing the $ sign (see page 55 of your manual) and 8 since there are 8 memory addresses involved to make up each character. Line 30 repeats the process 8 times and Line 40 holds your data.

The utility program actually writes these programs for each key you choose for each custom character you create!

Once you have stored the values of your new character set into memory, you will want to see the fruits of your labour on the screen. POKE 756 with the page number you are using, in this case it is 120, and voila!

NOTE. Entering a new Graphics command returns you to the Atari standard character set. You must POKE 756,120 (or whatever page you are using) straight after a new Graphics command. A GOSUB may help you here.

See next page for program

Character Generation Utility

Michael Jackson

This program runs on an Atari 400/800 computer with a minimum of 32K RAM.

The Utility allows the user 3 functions.

1) MANUAL — This status allows the user to create his own character by filling in any box on the grid.

2) DATA INPUT — Allows the user to input Data values and see what they represent in character form. This is particularly useful when analysing other people's character data.

3) CHARACTER INPUT — This status examines an existing character in the set.

The program always returns to MANUAL after any status and therefore allows you to improve upon or otherwise amend a character. For example, if the character you wish to create looks a bit like a 'T' then you can use the CHARACTER INPUT status to get the 'T' on the grid and then use MANUAL to change it slightly.

Your new character ON THE GRID will only be registered in the program's memory if you press 'G' for GENERATE. Please see the command list.

COMMAND LIST

CH — Allows you to enter a character on the grid. At the prompt, press the appropriate key and RETURN.

CL — Clears the grid.

D — Allows you to enter DATA and see the character representation. At the prompt, enter 8 values, hitting RETURN after each.

E — Puts the program in ERASE mode. Use to erase points on the grid.

F — FILL mode. Use to plot points on the grid.

G — Commits whatever is on the grid to memory. (Even a blank grid.)

LI — Allows key choice for each character created. Follow the prompts. This key must always be used before you can save any characters to tape.

Lx — Where x is the layer number of the grid. To fill points on layer 2 of the grid enter L2 and then press a key 1-8 to fill or erase a point in that layer.

The program writes its own code for each custom character using a special feature called screen editing. It is for this reason that you can create only a maximum of four characters at any one time. You may return to the program to redefine more after ever four characters have been generated by the 'G' command. If you try to generate a fifth character, the program reminds you to use the LI command. You do not have to wait for the reminder, especially if you only want to redefine one character!

LOADING A SAVED CHARACTER SET

To load a character set that you have saved using the CHARACTER GENERATION UTILITY, use the following program:

```
10 OPEN #4,4,0,"C:":FOR I=0 TO 1023:
GET #4,P: POKE 30720+I,P:NEXT I:
CLOSE #4
```

30720 by the way is simply the page number multiplied by 256. If the program that will use your custom set is a small one, you may want to use another page lower in memory. It's up to you.

A final reminder. Don't forget to POKE 756,120 (or whatever page you are using) and that this must be done every time a new Graphics command is used.

```
1 REM ******************************
2 REM *    CHARACTER GENERATOR     *
3 REM *    by MICHAEL JACKSON      *
4 REM ******************************
50 POKE 1536,0:POKE 842,12:GOTO 250
99 REM ***DIRECT INPUT ROUTINE
100 A$=CHR$(DS):IF A$="L" OR A$="l" TH
EN CLOSE #5:OPEN #5,4,0,"K:":GET #5,DS
:? CHR$(DS):A$(LEN(A$)+1)=CHR$(DS)
150 IF A$="C" OR A$="c" THEN CLOSE #5:
OPEN #5,4,0,"K:":GET #5,DS:? CHR$(DS):
A$(LEN(A$)+1)=CHR$(DS)
200 CLOSE #5:RETURN
249 REM ***MACHINE CODE DATA
250 FOR I=0 TO 55:READ A:POKE 1537+I,A
:NEXT I
300 DATA 104,169,0,162,0,189,8,224,157
,8,120,232,224,247,208,245,162,0,189,0
,225,157
350 DATA 0,121,232,224,255,208,245,162
,0,189,0
400 DATA 226,157,0,122,232,224,255,208
,245,162,0,189,0,227,157,0,123,232,224
,255,208,245,96
449 REM ***MACHINE CODE EXECUTION TO C
OPY ATARI SET TO PAGE 120
450 X=USR(1537)
500 DIM K$(1),P(9),C(9),DAT(200),KEY(1
0),AN$(1)
549 REM ***RESET VARIABLES
550 LI=1:GCOUNT=0:XXX=1:LIN=PEEK(1536)
600 FOR I=1 TO 8
650 P(I)=0:C(I)=0
700 NEXT I
749 REM ***CREATE A WORKING CHARACTER-
@
750 FOR I=1 TO 8
800 POKE 120*256+32*8+(I-1),0
850 NEXT I
900 DIM C$(1),A$(2),B$(1):A=2:Y=1:YY=3
949 REM ***DRAW UP GRID
950 GRAPHICS 0:POKE 756,120:POKE 752,1
:SETCOLOR 2,12,6:SETCOLOR 4,12,6:SETCO
LOR 1,12,0
999 REM USE CTRL TO ENTER LETTERS IN N
EXT LINE
1000 POSITION 4,2:? "QRWRWRWRWRWRWRWRE
"
1049 REM NEXT LINE USE SHIFT WITH = SI
GNS AND CTRL WITH LETTERS
1050 FOR I=3 TO 17:POSITION 4,I:? "= =
 = = = = = = =":IF I/2=INT(I/2) THEN P
OSITION 4,I:? "ARSRSRSRSRSRSRSRD"
1100 NEXT I
1799 REM USE CTRL TO ENTER LETTERS IN
NEXT LINE
1800 POSITION 4,18:? "ZRXRXRXRXRXRXRXR
C"
1850 FOR I=1 TO 8
1900 POSITION 3,1+I*2:? I
1950 NEXT I
2000 FOR I=1 TO 8
2050 POSITION 3+I*2,19:? I
2100 NEXT I
2150 POSITION 27,6:? "FILL"
2200 TRAP 2200:POSITION 3,0:? ">>BY M.
JACKSON<<"
2250 POSITION 22,0:? "CHARACTER":POSIT
ION 22,1:? "GENERATION":POSITION 22,2:
? "UTILITY":REM ALL WORDS IN INVERSE
2300 POSITION 22,3:? "_______________
_":REM _ IS SHIFT MINUS
2350 POSITION 22,5:? "LAYER ";Y:REM IN
VERSE
2400 POSITION 22,6:? "MODE ":REM INVER
SE
2450 POSITION 22,7:? "_______________
_":REM SHIFT MINUS
2500 POSITION 22,9:? "STATUS ":POSITIO
N 22,10:? "________________":REM STA2
2,10:? "________________":REM STATUS
IN INVERSE,REST SHIFT MINUS
2550 POSITION 22,12:? "CHARACTER>@":PO
SITION 22,13:? "________________":REM
 SHIFT MINUS
2600 POSITION 22,14:? "Lx=LAYER No.":P
OSITION 22,15:? "D=INPUT DATA":POSITIO
N 22,16:? "CH=INPUT CH."
2650 POSITION 22,17:? "G=GENERATE":POS
ITION 22,18:? "CL=CLR.GRID"
2700 CLOSE #5
2749 REM YOUR INPUT NEXT LINE IN INVER
SE
2750 POSITION 29,9:? "MANUAL     ":POSI
TION 22,20:OPEN #5,4,0,"K:":? "YOUR IN
PUT "::A$="":GET #5,DS:? CHR$(DS);:GOS
UB 100
2800 FOR DY=1 TO 60:NEXT DY:POSITION 3
3,20:? "    "
2849 REM ***IDENTIFY CHOICE
2850 IF A$="L1" OR A$="l1" THEN YY=3:Y
=1:GOTO 2250
2900 IF A$="L2" OR A$="l2" THEN YY=5:Y
=2:GOTO 2250
2950 IF A$="L3" OR A$="l3" THEN YY=7:Y
=3:GOTO 2250
3000 IF A$="L4" OR A$="l4" THEN YY=9:Y
=4:GOTO 2250
3050 IF A$="L5" OR A$="l5" THEN YY=11:
Y=5:GOTO 2250
3100 IF A$="L6" OR A$="l6" THEN YY=13:
Y=6:GOTO 2250
3150 IF A$="L7" OR A$="l7" THEN YY=15:
Y=7:GOTO 2250
3200 IF A$="L8" OR A$="l8" THEN YY=17:
Y=8:GOTO 2250
3250 IF A$="LI" OR A$="li" THEN 8350
3300 IF A$="D" OR A$="d" THEN POSITION
 29,9:? "DATA INPUT":GOTO 6550
3350 IF A$="CH" OR A$="ch" THEN POSITI
ON 29,9:? "CH.INPUT ":GOTO 6450
3400 IF A$="E" OR A$="e" THEN A=1:POSI
TION 27,6:? "ERASE":GOTO 2250
3450 IF A$="F" OR A$="f" THEN A=2:POSI
```

over

```
TION 27,6:? "FILL ":GOTO 2250
3500 IF A$="G" OR A$="g" THEN POSITION
 29,9:? "GENERATE ":GOTO 4050
3550 IF A$="CL" OR A$="cl" THEN POSITI
ON 29,9:? "CLEAR    ":GOSUB 6100:GOTO
2700
3600 IF VAL(A$)<1 OR VAL(A$)>8 THEN GO
TO 2700
3650 X=0
3699 REM ***IDENTIFY LEVEL-POSITION
3700 FOR IN=1 TO 8
3750 IF VAL(A$)=IN THEN X=3+IN*2
3800 NEXT IN
3850 B$=" ":REM INVERSE SPACE
3900 IF A=2 THEN B$=" ":REM INVERSE SP
ACE
3950 IF A=1 THEN B$=" "
4000 POSITION X,YY:? B$:GOSUB 8150:GOT
O 2200
4050 REM ***GENERATION ROUTINE
4100 IF GCOUNT>3 THEN POSITION 22,20:?
 " LIST NOW ":POKE 764,255:GOTO 2200:R
EM LIST NOW IN INVERSE
4150 GCOUNT=GCOUNT+1
4200 FOR LA=1 TO 8
4250 FOR CO=1 TO 8
4300 GOSUB 5200
4350 GOSUB 5650
4399 REM SPACES IN NEXT LINE IN INVERS
E
4400 LOCATE 3+CO*2,TT,YP:IF CHR$(YP)="
 " THEN P(LA)=P(LA)+S:POSITION 3+CO*2,
TT:PUT #6,ASC(" "):GOTO 4500
4450 POSITION 3+CO*2,TT:PUT #6,ASC(" "
)
4500 NEXT CO
4550 NEXT LA
4600 POSITION 2,22:?"
                     "
4649 REM ***CREATION OF WORKING CHARAC
TER AND DATA WRITE-UP
4650 POSITION 1,22:? "DATA ":
4700 FOR I=1 TO 8
4750 POKE 120*256+32*8+(I-1),0
4800 POKE 120*256+32*8+(I-1),P(I)
4850 IF A$="G" OR A$="g" THEN DAT(LI)=
P(I):LI=LI+1
4900 IF I=8 THEN ? P(I):GOTO 5000
4950 ? P(I);",";
5000 P(I)=0
5050 NEXT I
5100 P=0
5150 GOTO 2250
5199 REM ***CALCULATION OF DATA VALUES
 AND POSITIONS
5200 IF LA=1 THEN S=128:TT=3
5250 IF LA=2 THEN S=64:TT=5
5300 IF LA=3 THEN S=32:TT=7
5350 IF LA=4 THEN S=16:TT=9
5400 IF LA=5 THEN S=8:TT=11
5450 IF LA=6 THEN S=4:TT=13
5500 IF LA=7 THEN S=2:TT=15
5550 IF LA=8 THEN S=1:TT=17
5600 RETURN
5650 IF CO=1 THEN S=128
5700 IF CO=2 THEN S=64
5750 IF CO=3 THEN S=32
5800 IF CO=4 THEN S=16
5850 IF CO=5 THEN S=8
5900 IF CO=6 THEN S=4
5950 IF CO=7 THEN S=2
6000 IF CO=8 THEN S=1
6050 RETURN
6100 FOR LA=1 TO 8
6150 FOR PA=1 TO 8
6200 GOSUB 5200
6250 POSITION 3+PA*2,TT:? " "
6300 NEXT PA
6350 NEXT LA
6400 RETURN
6450 POSITION 22,20:? "YOUR INPUT ":PO
SITION 22,21:? "CHARACTER";:REM CHARAC
TER IN INVERSE
6500 INPUT C$:POSITION 31,21:? "      "
6550 POSITION 1,22:? "
                     "
6600 POSITION 1,22:? "DATA ";
6650 IF A$="D" OR A$="d" THEN FOR D=1
TO 8:INPUT DD
6700 IF A$="D" OR A$="d" THEN POSITION
 6,22:? "     ":C(D)=DD:POSITION 6,22:N
EXT D:GOTO 7050
6749 REM ***CALCULATION OF CHOSEN CHAR
ACTER POSITION IN MEMORY
6750 IF ASC(C$)<=31 THEN CHR=ASC(C$)+6
4:GOTO 6900
6800 IF ASC(C$)>=96 THEN CHR=ASC(C$):G
OTO 6900
6850 CHR=ASC(C$)-32
6900 FOR C=0 TO 7
6950 C(C+1)=PEEK(120*256+CHR*8+C)
7000 NEXT C
7050 GOSUB 6100
7100 FOR F=1 TO 8
7150 P(F)=C(F)
7200 NEXT F
7250 FOR LA=1 TO 8
7300 GOSUB 5200
7350 FOR FI=1 TO 8
7400 GOSUB 7700
7450 IF C(LA)/SS>=1 THEN C(LA)=C(LA)-S
S:POSITION 3+FI*2,TT:? " ":GOSUB 8150
7500 NEXT FI:REM SPACE IN INVERSE
7550 NEXT LA
7600 POSITION 22,21:? "          "
7650 GOTO 4600
7699 REM ***CALCULATES A CHOSEN CHARAC
TERS MAKE-UP
7700 IF FI=1 THEN SS=128
7750 IF FI=2 THEN SS=64
7800 IF FI=3 THEN SS=32
7850 IF FI=4 THEN SS=16
```

```
7900 IF FI=5 THEN SS=8
7950 IF FI=6 THEN SS=4
8000 IF FI=7 THEN SS=2
8050 IF FI=8 THEN SS=1
8100 RETURN
8150 SOUND 0,7,12,10
8200 FOR DY=1 TO 3:NEXT DY
8250 SOUND 0,0,0,0
8300 RETURN
8350 IF GCOUNT<1 THEN 2200
8360 GOSUB 9150
8400 ? "}":SETCOLOR 2,5,3:SETCOLOR 4,5
,3:POKE 756,224
8450 ? "            PLEASE WAIT":REM WORD
S IN INVERSE
8499 REM ***CREATION OF EXTRA PROGRAM
TO REDEFINE CUSTOM CHARACTERS
8500 ST=1:YY=3
8550 LIN=LIN+1:LINE=20000+LIN
8600 POSITION 1,YY:? STR$(LINE);" FOR
I=0 TO 7:READ A:POKE 120*256+";KEY(XXX
);"*8+I,A:NEXT I":LINE=LINE+1:YY=YY+2
8650 POSITION 1,YY:? STR$(LINE);" DATA
";:YY=YY+2:LIN=LIN+1
8700 FOR Z=ST TO (LI-1)
8750 IF Z=(LI-1) THEN ? DAT(Z):GOTO 89
00
8800 IF Z=ST+7 THEN ? DAT(Z):ST=Z+1:XX
X=XXX+1:GOTO 8550
8850 ? DAT(Z);",";
8900 NEXT Z
8950 POKE 1536,LIN
9000 POSITION 1,YY+1:? "G.9600"
9050 POSITION 1,1:POKE 82,1:POKE 842,1
3
9100 END
9150 ? "}":SETCOLOR 2,5,3:SETCOLOR 4,5
,3:SETCOLOR 1,5,10
9200 FOR KEY=1 TO GCOUNT
9249 REM ***KEY CHOICE FOR CUSTOM CHAR
ACTER ROUTINE
9250 POSITION 6,10:? "CHOOSE KEY FOR C
HARACTER ";KEY;"=";:INPUT K$
9300 IF ASC(K$)<=31 THEN CHR=ASC(K$)+6
4:GOTO 9450
9350 IF ASC(K$)>=96 THEN CHR=ASC(K$):G
OTO 9450
9400 CHR=ASC(K$)-32
9450 KEY(KEY)=CHR
9500 NEXT KEY
9550 RETURN
9600 POKE 842,12:RESTORE 20002
9650 REM ***LINES 20001 TO 29999 TO BE
 OCCUPIED BY CREATED PROGRAM
30000 ? "}":POKE 82,2:? :? :? "WANT
 TO DEFINE MORE CHARACTERS(Y/N)";:INPU
T AN$:IF AN$="Y" THEN CLR :GOTO 450
30009 REM ***SAVE CHARACTER SET ROUTIN
E
30010 ? "}":? :? :? :? "WANT TO SAVE Y
OUR CUSTOM SET(Y/N)";:INPUT AN$:IF AN$
="N" THEN END
30020 ? "}":? :? :? "PUSH RECORD AN
D PLAY-PRESS RETURN"
30040 OPEN #2,8,0,"C:"
30050 FOR I=0 TO 1023:P=PEEK(120*256+I
):PUT #2,P:NEXT I
30060 CLOSE #2:? "}":? :? :? :? "YOUR
SET HAS BEEN SAVED":END
```

Demos

This demonstration was suggested by a short program on drawing circles sent in by Terry Lawson. I have turned it into a demo of the effects available in Graphics 10. Thanks to Terry, without whose little program I would not have known how to draw a circle! (This actually comes up as an oval because of the pixel layout of Graphics 10.)

```
10 GRAPHICS 10:FOR I=1 TO 8:POKE 704+I
,I*16+6:NEXT I
15 W=40:H=85
20 DEG
30 R=35
35 IF R=0 THEN 200
40 C=R:COLOR C/4:PLOT W,H
50 A=A+15
60 X=W+SIN(A)*R
70 Y=H-COS(A)*R
80 DRAWTO X,Y
90 IF A=375 THEN R=R-1:A=0:GOTO 35
100 GOTO 50
200 CO=PEEK(705):X=705
210 POKE X,PEEK(X+1)
220 X=X+1:IF X<712 THEN 210
230 POKE 712,CO:GOTO 200
```

```
10 REM **** RECTANGLES ****
11 REM
20 GRAPHICS 5+16
40 COLOR INT(RND(0)*3+1)
50 X=INT(RND(0)*69):Y=INT(RND(0)*38)
60 X1=INT(RND(0)*7+3):Y1=INT(RND(0)*7+
3)
70 PLOT X,Y:DRAWTO X+X1,Y:DRAWTO X+X1,
Y+Y1:DRAWTO X,Y+Y1:DRAWTO X,Y
90 GOTO 40
```

KEYBOARD TECHNIQUES

Les Ellingham

There are two commonly used methods of obtaining input from the keyboard during a program. The first is the INPUT statement which can be used to input either a numeric variable or a string and the second is the GET statement which accepts only one keystroke in the form of an ATASCII number. Appendix C of the Basic Reference Manual gives a full list of the ATASCII character set and corresponding decimal codes.

One thing both these statements have in common is that they stop the program until such time as a key is pressed and in the case of the INPUT statement, until RETURN is pressed. In certain cases this can be a distinct disadvantage. You may, for instance, wish to set a time limit in which to enter an answer to a question or may wish to have a 'real-time' battle scene giving you only seconds in which to attack or defend. For both these situations neither INPUT or GET are of any use. Fortunately there is an answer and that is to take a PEEK at the keyboard. Memory location 764 holds a value which corresponds to the last key pressed or contains the value 255 if no key is pressed. So all you have to do is PEEK location 764, read the ATASCII code and convert that to see which key you pressed. Right? No, wrong! Unfortunately, the value stored in location 764 has no relation whatever to the ATASCII code and is an internal code recognised only by your Atari.

You can easily program around this limitation by combining a PEEK to location 764 with a GET statement, but in many cases there is no need to print out the character of the key pressed and it would be helpful to be able to include the keyboard code in your program for immediate recognition. The Basic Reference Manual does not include a list of the keyboard codes and I have not seen them printed elsewhere, so the accompanying chart lists the internal code of all the keys.

Fine, another chart to refer to, but what practical use can this be put to? I mentioned earlier a 'real-time' battle scene where you had to input information quickly to attack or defend. When attacking, you may, for instance, wish to hit 'H' for an attack to your opponent's head, 'B' for an attack to the body or 'L' for an attack to the legs. The following subroutine can be used.

```
100 POKE 764,255:FOR I=1 TO 20
110 IF PEEK(764)=57 THEN GOTO 500
120 IF PEEK(764)=21 THEN GOTO 600
130 IF PEEK(764)=0 THEN GOTO 700
140 NEXT I:? "OUT OF TIME"
```

Line 500 would determine the outcome of a blow to your opponent's head, line 600 to his/(its?) body and line 700 to the legs. The length of the loop should be altered to suit how quickly you wish to react. If you failed to hit any of the correct keys, the program would return from the subroutine to allow your opponent to continue his attack. If this type of subroutine is used for a 'surprise' attack, preceded only by a quick warning, it is surprising how nimble you have to be to hit the right keys!

If you wish to use location 764 to obtain an answer within a time limit, then again PEEK at the keyboard from within a loop. Suppose, for example, you have a program which poses a question and gives a choice of four answers — A, B, C or D. The following can be used as a subroutine (assume C is the right answer).

```
100 POKE 764,255:FOR I=1 TO 200
110 IF PEEK(764)=18 THEN ? "RIGHT":RET
URN
120 IF PEEK(764)<>255 AND PEEK(764)<>1
8 THEN ? "WRONG":RETURN
130 NEXT I:? "TIME UP":RETURN
```

There must be many other ways to use the internal keyboard code and also routines which involve POKEing location 764. Certainly you can fool your Atari into thinking you have pressed RETURN by a POKE 764,12. When you next load a program try typing POKE 764,12:CLOAD (make sure that the tape is ready first!).

The secret of learning to program is to experiment. Try expanding the simple routines given and making up some of your own. The suggestions are only a couple of many uses for a PEEK at the keyboard. What other interesting applications can you find?

INTERNAL KEYBOARD CODES

KEY	CODE	KEY	CODE	KEY	CODE	KEY	CODE
1	31	F	56	U	11	+	6
2	30	G	61	V	16	*	7
3	26	H	57	W	46	CAPS/LOW	60
4	24	I	13	X	22	,	32
5	29	J	1	Y	43	.	34
6	27	K	5	Z	23	/	38
7	51	L	0	ESC	28		39
8	53	M	37	<	54	SPACE	33
9	48	N	35	>	55		
0	50	O	8	BACK S	52		
A	63	P	10	TAB	44		
B	21	Q	47	-	14		
C	18	R	40	=	15		
D	58	S	62	RETURN	12		
E	42	T	45	;	2		

PRESSING SHIFT AT THE SAME TIME ADDS 64. PRESSING CTRL AT THE SAME TIME ADDS 128.

PRESSING SHIFT AND CTRL AT THE SAME TIME AS A KEY ADDS 192, BUT ONLY IF THE KEY VALUE IS 24 OR OVER

Character Designer

Paul Stevens

(Editor's note: This program does not offer all the facilities of the CHARACTER GENERATION UTILITY but is superb graphically and very easy to use. It only uses 16K).

This program let's you design your own characters using the joystick on an 8 x 8 grid. It then works out and displays the DATA for you to incorporate in your own program.

A flashing marker will show your position on the grid. To fill in a square simply press the fire button. To erase the square press the button again.

```
 1 REM ***********************
 2 REM * CHARACTER DESIGNER *
 3 REM *   BY PAUL STEVENS  *
 4 REM *       6/3/83       *
 5 REM ***********************
 6 REM
 10 GRAPHICS 23:POKE 559,0:POKE 708,194
 :POKE 709,252:POKE 710,0:POKE 711,138:
 POKE 752,1
 20 REM ALTER DISPLAY LIST
 30 A=PEEK(560)+PEEK(561)*256+4
 40 POKE A-1,70:POKE A+2,6:POKE A+5,2:P
 OKE A+95,2:POKE A+97,2:POKE 560,154
 50 POKE 87,1:POSITION 1,0:? #6;"charac
 ter designer":REM INVERSE VIDEO
 60 POKE 87,0:POSITION 2,3:? "DATA 0,0,
 0,0,0,0,0,0"
 70 REM POKE WRITING TO SCREEN BOTTOM
 80 A=PEEK(88)+PEEK(89)*256+3720
 90 FOR C=1 TO 47:READ D,E:POKE A+D,E:N
 EXT C
 100 DATA 5,48,6,50,7,37,8,51,9,51,11,1
 79,12,180,13,161,14,178,15,180,17,52,1
 8,47,20,35,21,33,22,44,23,35,24,53
 110 DATA 25,44,26,33,27,52,28,37,30,36
 ,31,33,32,52,33,33,85,48,86,50,87,37,8
 8,51,89,51,91,175,92,176,93,180
 120 DATA 94,169,95,175,96,174,98,52,99
 ,47,101,35,102,44,103,37,104,33,105,50
 ,107,39,108,50,109,41,110,36
 130 POKE 87,7:COLOR 1
 140 REM DRAW 8x8 GRID
 150 FOR A=9 TO 89 STEP 10
 160 PLOT 40,A:DRAWTO 120,A:NEXT A
 170 FOR A=40 TO 120 STEP 10
 180 PLOT A,9:DRAWTO A,89:NEXT A
 190 POKE 559,34
 200 REM MOVE MARKER ON GRID
 210 X=45:Y=14
 220 S=STICK(0)
 230 IF PEEK(53279)=6 THEN 490
 240 IF PEEK(53279)=3 THEN 660
 250 IF S=14 THEN GOSUB 370:Y=Y-10
 260 IF S=13 THEN GOSUB 370:Y=Y+10
 270 IF S=11 THEN GOSUB 370:X=X-10
 290 IF S=7 THEN GOSUB 370:X=X+10
 290 IF X<45 THEN X=115
 300 IF X>115 THEN X=45
 310 IF Y<14 THEN Y=84
 320 IF Y>84 THEN Y=14
 330 COLOR 0:PLOT X,Y
 340 FOR DELAY=1 TO 50:NEXT DELAY
 350 IF STRIG(0)=0 THEN 410
 360 COLOR 2:PLOT X,Y:GOTO 220
 370 POKE 53279,0:LOCATE X+1,Y,C
 380 IF C=0 THEN COLOR 0:PLOT X,Y
 390 RETURN
 400 REM FILL SQUARE
 410 LOCATE X+1,Y,C
 420 IF C=0 THEN COLOR 2:D=100
 430 IF C=2 THEN COLOR 0:D=200
 440 SOUND 0,D,10,8:POKE 77,0
 450 FOR B=Y-4 TO Y+4
 460 PLOT X-4,B:DRAWTO X+4,B:NEXT B
 470 SOUND 0,0,0,0:GOTO 220
 480 REM SCAN GRID & CALCULATE DATA
 490 COLOR 0:PLOT X,Y:PLOT 0,10:POKE 87
 ,0:POSITION 7,3:? "
        "
 500 POKE 87,7:D=6
 510 FOR B=14 TO 84 STEP 10
 520 E=256:H=0
 530 FOR A=45 TO 115 STEP 10
 540 E=E-E/2
 550 LOCATE A+1,B,C
 560 IF C=2 THEN H=H+E
 570 NEXT A
 580 REM PRINT DATA
 590 PLOT 0,10:POKE 87,0:POSITION D,3:?
  ",";H
 600 IF D=6 THEN POSITION D,3:? " "
 610 IF H>=100 THEN D=D+4
 620 IF H<100 THEN IF H>9 THEN D=D+3
 630 IF H<10 THEN D=D+2
 640 POKE 87,7:NEXT B:GOTO 220
 650 REM CLEAR GRID
 660 COLOR 0
 670 FOR B=14 TO 94 STEP 10
 680 FOR A=45 TO 125 STEP 10
 690 LOCATE A,B,C:IF C<>2 THEN 720
 700 FOR D=B-4 TO B+4:PLOT A-4,D
 710 DRAWTO A+4,D:NEXT D
 720 NEXT A:NEXT B:PLOT 0,10
 730 POKE 87,0:POSITION 7,3:? "0,0,0,0,
 0,0,0,0          ":POKE 87,7
 740 GOTO 210
```

Software Reviews

FLOYD OF THE JUNGLE

MICROPROSE 32K CASS.

1/4 PLAYERS 32K DISK

Silly title! Still I suppose that Tarzan is copyrighted, so Floyd is as good as any. In this game you, as Floyd, have to rescue the lovely Janice by thrashing your way through the jungle which is set out like a combination of Apple Panic and Frogger. Instead of ladders you have vines to climb and instead of the assorted perils of Frogger, you have snakes, alligators, tigers, pygmies, monkeys and elephants all wandering along ready to eat or squash you. You still have the river with boats to jump on to get across. On the way to saving Janice, you can score points by capturing birds and 'punching pygmies'. Trouble is, it is hard to tell the difference between the birds, pygmies and monkeys, and the monkeys are deadly.

The biggest plus of the game is that it allows up to four players (all Floyds?) at the same time to race against each other in a bid to become the first to rescue the damsel. The screen is very colourful with snakes hissing back and forth, alligators opening and closing their mouths, monkeys swaying to and fro, etc., and Floyd actually runs with arms and legs going full pelt. Point him in the right direction with the joystick and press the fire button to watch him bound along or jump over the animals. Watch out for those poison pygmy darts on the way! Once you get the timing right for your jumps, the game is not too difficult and as you have unlimited Floyds, it doesn't matter too much if you are eaten — you only return to the beginning. Screen two is harder, obviously, and screen three has the river to cross and plenty of elephants. Playing solo, I quickly got up to screen three and once I had mastered riding the elephants, managed to rescue Janice. I eagerly looked forward to the super challenges of screen four only to find that the game ended. You have to start at a higher level to get to screens four and five.

To master this game is fairly easy, but then it is not really a one player game. All the fun comes in racing against the other Floyds and picking up bonus birds and pygmies whilst watching your opponents being eaten by alligators! At times, the game can get quite hilarious and you won't know whether to concentrate on your own Floyd or watch the others in peril.

If you are a dedicated gamer and welcome the big challenge, don't bother with Floyd of the Jungle, but if you want some FUN, particularly if you know someone with two more joysticks, this could be just the game. I imagine that the kids will love it.

CHOPPER RESCUE

MICROPROSE 32K CASS.

1/4 PLAYERS 32K DISK

Not really what I imagined it to be. I had expected this to be another version of Choplifter but it is an underground labyrinth type game where you have to fly your chopper and rescue people from ledges and various nooks and crannies. Of course there are plenty of things to stop you — these games are never THAT easy.

I was quite taken with Chopper Rescue, it is PLAYABLE yet still has quite a lot of challenge. Not being the world's best arcade player, I get fed up with games that kill me off every 5 seconds but I found in Chopper Rescue that you at least had a chance when danger lurked. There are plenty of obstacles to your rescue mission. Laser guns are stationed on the walls, bomb pods shoot spinning explosive upwards, whilst force fields bar your way. All of these can be destroyed with either your missiles or bombs. There are also several pulsating pods that either supply energy to the enemy lasers or act as hatching plants for the 'mutants' that come for you every so often. Didn't I mention them? Oh well, you can kill them off. Best idea

is to destroy everything in sight, that way you are safer and get more points. After rescuing ten hostages, you go on to a more difficult labyrinth with more obstacles and pods. Some of these are very difficult to get to, but you can release your bombs with forward momentum and sort of 'throw' them into the narrow channels.

A word about the confusion over the 'energy pods'. The problem is that with these MicroProse games, the documentation is pretty basic to say the least. In fact, considering the price (normal Atari Prices), it is downright poor. I know that it is the game that counts, and this one is very good, but if we have to continue paying these high prices, then would it not be asking too much to have some extensive and well presented literature for our money?

RAIDUS

PYRAMID SOFTWARE 16K CASS.

1 PLAYER 32K DISK

The latest space action game Raidus has you in an attack fighter within the Mother Ship high above one of the planets of the Cronian Empire. Miles below on the planet surface is one of the Evil Overlords — mechanical devices that act as security posts for the Cronians. You must leave the Mother Ship, fly down to the planet surface whilst avoiding the enemy patrols and space boulders, find and destroy the Evil Overlord and return to the Mother Ship to continue your mission on another planet.

The action is spread over dozens of screens, but the game does not scroll, rather it flips from screen to screen but does give the impression of continuous movement. The graphics of the Mother Ship and the cities on the planet surface are very good but out in space are just hundreds of stars, too many to make it look realistic. What's it like to play? HARD! In fact I found it so hard that I lost the majority of my craft just getting out of the Mother Ship! Control is by the joystick, but once you move in one direction you carry on moving and can go careering from screen to screen until you inevitably crash into something. The only way to slow down is by applying thrust in the opposite direction but it is not easy. The effect is rather like trying to drive a car on an ice rink. What it is like at the more difficult levels, I dread to think. During the time I had this game to review, I didn't even get down to the planet's surface and there are 216 levels in all. Yes, 216! What's more, each level can only be accessed by a password gained by completing the previous level.

If you want a real challenge, then this game appears ideal. It easily lives up to its claim of being 'a game you will not easily master' and with 216 levels of play you will have to spend many hours (weeks?) developing your skills before you can claim to have completed your mission.

HELLCAT ACE

MICROPROSE 32K CASS.

1/4 PLAYERS 48K DISK

Go and get the seat belt from the car and strap yourself into the chair. You'll need it for this World War II flying simulation! The screen gives you the view from the cockpit of your aircraft as you battle against the Japanese in 14 different scenarios based on actual events in the battles of the Pacific in World War II. The graphics are simple but the overall effect is quite stunning as you bank, dive, climb or loop the loop to get the enemy in your gunsights. There are even instructions on how to do Immelmann turns and Split S's! The sun lies just above the horizon and as you turn away the sky darkens to give you an idea of your heading. You can do all of the manoeuvres expected and if you get into trouble you can try to ditch or bail out. For the more experienced there are night missions.

This is a great simulation giving a real feel of action but I have never flown a light aircraft and

do not know how accurate it is. Any RAF flying officers out there who are into computer games? Is this as realistic as it seems? I thought it was great.

LEGIONNAIRE

AVALON HILL 16K CASS.

1 PLAYER

Legionnaire is the latest offering from Chris Crawford, the man who designed Eastern Front which was a major step forward in micro-computer gaming. Legionnaire is better than Eastern Front. Much better. It has all of the challenge (unless you are a very experienced War-gamer), better looking graphics, multiple choices of scenario and above all, the battles happen in real time. Still no game save feature but with all the options available you can choose a fairly short campaign.

For those not familiar with the style of Eastern Front, the structure of Legionnaire is of a large map of the terrain on which your battles will take place. The map scrolls in any direction and is perhaps 12 times larger than your television screen so that battles are taking place outside your immediate vision. You command Caesar and up to 9 other Legions in battles against barbarian tribes that outnumber you two to one. By giving your troops orders of movement you can use the terrain to best advantage to attack, outflank or surround your enemy. Everything is programmed in — slower movement uphill, fatigue and morale of the troops, strength, fighting ability, losses in combat — all are taken care of by the computer and the current state of any unit can be seen by positioning the cursor over a unit and pressing the fire button. There is a 20 page manual which gives you historical background, details of the various legions at your command and details of the barbarian tribes. You need to get some idea of the capabilities of your units beforehand because as soon as you press the Start button the barbarians start advancing. Remember this is in real time and requires some quick thinking.

Legionnaire is an excellent demonstration of the capabilities of your Atari, its presentation will make owners of other computers wonder why they didn't buy the best. Atari themselves did not want this in their catalogue which shows exactly why they are not making the headway they should be with the best computer on the market. All credit to Avalon Hill, although they were not taking much of a gamble, for Legionnaire is a sure fire success. Only one criticism and that is the lack of credit to Chris Crawford in the packaging. His name appears only in small type as Game Designer and Avalon Hill ought to realise that in the Atari world the name of Chris Crawford is now synonymous with that of Scott Adams.

Software for review kindly supplied by Calisto Computers of Birmingham and Avalon Hill Games of London.

THE PAGE 6 AWARDS

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Master Directory

Colin Friston

As an extension to the Disk Directory in Issue 2, I now present a Master Directory which will give you a print-out of all programs on your disks in alphabetical order.

The program will request the insertion of all your disks, one after another and store the contents in two strings, L1$ and L2$. These are then sorted into alphabetical order and printed out. The program can accept up to 300 entries and has the facility in lines 1000 on to exclude often recurring items such as DOS,DUP SYS etc.

```
1 REM ***************************
2 REM *     MASTER DIRECTORY     *
3 REM *          BY              *
4 REM *     COLIN FRISTON        *
5 REM ***************************
6 REM
7 DIM L1$(5000),L2$(5000),T$(30),A$(20
),DISK$(10),DATE$(40),SPACE$(20)
8 GRAPHICS 0:POKE 712,48:POKE 710,48:?
:? ,"MASTER DIRECTORY":? :L1=-29:L2=L
1
9 ? "INPUT DATE ";:INPUT DATE$
10 FOR T=1 TO (40-LEN(DATE$))/2:SPACE$
(T,T)=" ":NEXT T
15 ? :? "WAIT - 5 K STRINGS BEING CLEA
RED.":? :FOR T=1 TO 5000 STEP 20:L1$(T
,T+19)="                    ":NEXT T
20 L2$=L1$:GOTO 60
30 OPEN #1,6,0,"D:*.*"
40 INPUT #1,A$:GOSUB 1000:IF A$>"   N"
THEN 55
50 L1=L1+30:L1$(L1,L1+19)=A$:L1$(L1+20
,L1+29)=DISK$:GOTO 40
55 L2=L2+30:L2$(L2,L2+19)=A$:L2$(L2+20
,L2+29)=DISK$:GOTO 40
60 TRAP 60:? :? :? "INSERT DISK WHEN B
USY LIGHT GOES OUT.        TYPE <STO
P> TO STOP."
70 CLOSE #1:? :? "DISK NUMBER ";:INPUT
 DISK$:IF DISK$<>"STOP" THEN 30
500 N1=L1/30:N2=L2/30:TRAP 700
505 LPRINT :LPRINT "              MASTER
 DIRECTORY    ":LPRINT "
  AS AT":LPRINT SPACE$;DATE$:LPRINT
510 GRAPHICS 0:POKE 712,178:POKE 710,1
78:POKE 752,1
511 ? :? ," MASTER DIRECTORY":?
512 ? ," SORT IN PROGRESS. ":? :? ,"
 (";INT(N1+N2+2);" ITEMS). ":?
610 NN1=L1:FOR LOOP1=1 TO L1-30 STEP 3
0
620 FOR J1=1 TO NN1-30 STEP 30
630 IF L1$(J1,J1+29)>L1$(J1+30,J1+59)
THEN T$=L1$(J1+30,J1+59):L1$(J1+30,J1+
59)=L1$(J1,J1+29):L1$(J1,J1+29)=T$
640 NEXT J1:POSITION 15,7:? "(";INT((L
OOP1+60)/30);" DONE).":NN1=NN1-30:NEXT
 LOOP1
642 NN2=L2:FOR LOOP2=1 TO L2-30 STEP 3
0
644 FOR J2=1 TO NN2-30 STEP 30
646 IF L2$(J2,J2+29)>L2$(J2+30,J2+59)
THEN T$=L2$(J2+30,J2+59):L2$(J2+30,J2+
59)=L2$(J2,J2+29):L2$(J2,J2+29)=T$
648 NEXT J2:POSITION 15,7:? "(";INT((L
OOP1+LOOP2+90)/30);" DONE).":NN2=NN2-3
0:NEXT LOOP2
655 ? :? ,"  SORT COMPLETE.":?
660 FOR M1=1 TO L1 STEP 30
665 POSITION 6,13:PRINT INT(M1/30+1);"
: ";L1$(M1,M1+29);"          "
670 LPRINT "        ";INT(M1/30+1);": ";
L1$(M1,M1+25):NEXT M1
672 FOR M2=1 TO L2 STEP 30
673 POSITION 6,13:PRINT INT((M1+M2)/30
+1);": ";L2$(M2,M2+29);"
"
674 LPRINT "        ";INT((M1+M2)/30+1);
": ";L2$(M2,M2+25):NEXT M2:GRAPHICS 0:
TRAP 40000:LPRINT :LPRINT :END
700 TRAP 700:? :? "PRINTER NOT SWITCHE
D ON !":? :? "SWITCH ON PRINTER AND TY
PE <GOTO 505> TO RECOVER.":END
1000 IF A$(3,13)="DIR        " THEN 40
1010 IF A$(3,13)="DOS     SYS" THEN 40
1020 IF A$(3,13)="DUP     SYS" THEN 40
1030 IF A$(3,13)="MEM     SAV" THEN 40
1040 IF A$(1,1)="*" THEN A$(1,2)=" ":
A$(18,19)=" *"
1100 RETURN
```

WHOOPS! ... ERROR 17

Like all the quality magazines, we need a blunders corner sometimes which we will call ERROR 17 (look it up in your Manual!).

Issue 2 contained the following which should be amended.

Four In A Row — line 10045 should be deleted.

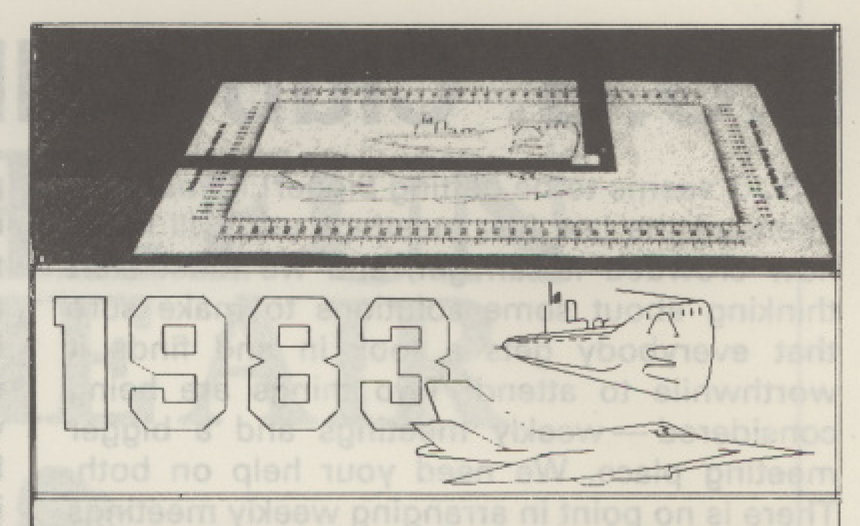
In the article GTIA modes, the word 'line' in the third paragraph should read 'hue'.

First Steps

Many beginners do not understand REM statements and believe they are responsible for program errors. They are in a way — if you don't bother to read them! A REM statement actually has no effect at all on the running of a program, it is there to help you understand what is going on or to give you help in typing in the listing. If you wish you can leave out all REM statements thus saving a lot of typing, but be careful. Sometimes a program branches to a line containing a REM statement and if you did not type that line you will get ERROR 12. The solution is to change the line number of the GOTO or GOSUB so that it refers to the line immediately following the line that you didn't type. Leaving out REMs will save you some typing but it is very important that you read all REMs before you type in a program. Quite often they give you clues on how to type in the following lines and if you don't work it out you will end up with all sorts of problems. Take TINY TEXT in Issue 2 for example. Line 580 gives you clues for typing the next few lines. The funny little symbol that you can't find in your Manual is a peculiarity of the printer. It cannot reproduce the right pointed arrow which you get by pressing ESC,TAB and so line 580 gives you a clue by saying that the symbol represents ESC,TAB. Try pressing ESC followed by TAB to see the 'arrow' referred to. Remember, REM statements are there to help you, not the program (they actually slow the program down). Make sure you read them before typing any lines referred to.

Did you know that you can stop a listing from scrolling up the screen by pressing CTRL and 1 at the same time? Pressing them again will start the listing up again. Even the experts took a long time to find that out!

The Atari has superb editing facilities but few people seem to use them properly. Sit down awhile and look through Chapter 3 of the Reference Manual and play around with the screen. If you use editing properly you will save a lot of time. Suppose for example you have to type the following lines




```
10 IF A=6 THEN GOTO 100
20 IF A=7 THEN GOTO 200
```

Instead of typing both lines, type in line 10 and then use the CTRL/UP ARROW keys to put the cursor over the 1 of 10 and type 2. Move the cursor right with the CTRL/RIGHT ARROW keys until it is over the 6 and type 7. Move the cursor right again to the 1 of 100 and type 2. Now press RETURN. All you will see is line 20, but now list the program. Presto! Two lines for the price of one (almost). Use the editing facilities whenever you see lines that are similar to lines you have already typed and you will save a lot of time. Don't forget that you can insert or delete characters in a line by using CTRL/INSERT or CTRL/DELETE.

Just for fun, try the following program. Put the word 'PRESS' in inverse. More about PEEKs and POKEs in future issues.

```
10 ? CHR$(125):? "PRESS SOME KEYS"
20 POKE 755,PEEK(764):GOTO 20
```

B.U.G. Club Call

BUG seems to be getting bigger! If you have attended the last few meetings you will know how crowded it can get, and we must start thinking about some solutions to make sure that everybody gets a look in and finds it worthwhile to attend. Two things are being considered — weekly meetings and a bigger meeting place. We need your help on both. There is no point in arranging weekly meetings if there is not going to be enough support, and please bear in mind that the meetings do take a lot of effort to organise. If you are genuinely interested in meeting weekly, let us know and indicate what sort of format you would be most happy with. The room we have at present is good value despite its limitations but we would like to be able to consider alternatives either for alternate meetings if we go weekly or as a new permanent home. Somebody knows of a room in Birmingham, either a hotel, pub or club which might be suitable. Please make some enquiries and let one of the committee know. We may well stay where we are but at least it would be handy to know if there are alternatives.

Mike Aston's Basic Course will have come to an end by now but the Club is anxious to continue to provide tutorials for members. We could arrange classes on specific subjects such as character redefinition, display lists, sound, graphics, etc., but it does take a lot of work to get together a decent course and it can be discouraging if there is not much interest. So let Mike know what you would be interested to learn and whether you can offer any assistance. The opportunity to learn is one of the prime reasons for having a User Group and is a very valuable part of BUG's make-up.

Now that the membership has grown there are many diverse interests among members and we need a way to channel interests so that everyone has the opportunity to join in something in which they are interested. We want to develop a number of Special Interest Groups which will run on a self-help basis where half a dozen or so of like minded people can get together to explore a particular area. It could be anything from writing an Adventure to learning a new language or writing machine language games. It could be something as simple as getting a party to play Zork. Being part of a small group will help you to develop more quickly and will give you the opportunity to meet outside the Club. Something good will come of some of the groups, such as writing a book or developing a game to market. If you are interested then get in touch with Keith Mason who is willing to co-ordinate these groups. Give him a ring and let him know what you are interested in and he should be able to put you in touch with others.

If you have any ideas or suggestions, speak to one of the committee at the meetings or feel free to give one of the following people a ring

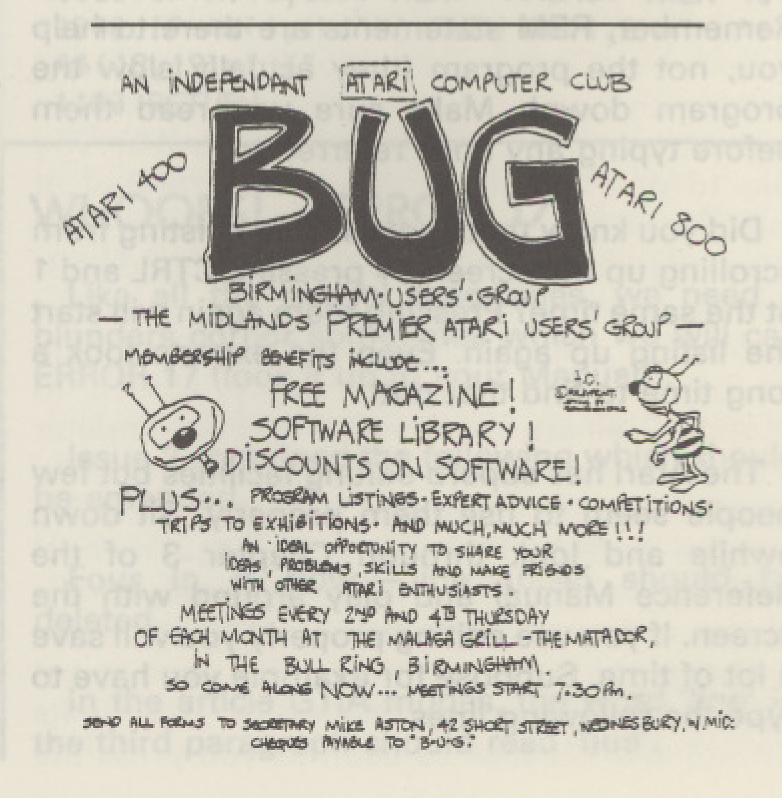
Chairman: Mike Reynolds-Jones	773 2849
Vice-Chairman: Keith Mason	558 7231
Secretary: Mike Aston	556 6578
Treasurer: Steve Gould	559 4602

Keep computing — and let's hear from you.

STOP PRESS.....STOP PRESS.....

Meetings are now weekly but check first as there are some dates when we can't have the room.

BUG's first software cassette was on sale at the MIDLANDS COMPUTER FAIR where we had a stand. Available to members and non-members at a ridiculously low price(!). If you would like a copy phone Mike Reynolds-Jones for availability.



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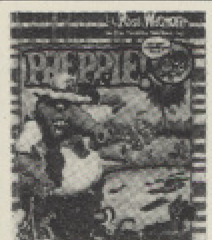
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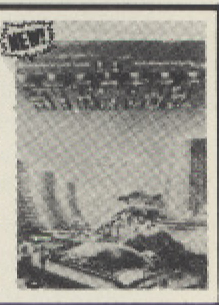


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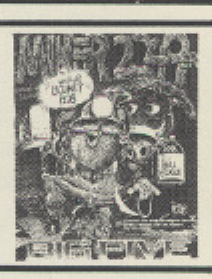


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